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## RECLOSABLE CAP FOR A BEVERAGE CONTAINER

## TECHNICAL FIELD

THIS INVENTION relates to a reclosable cap for a beverage container, the cap having a partially severable portion which can be severed to reveal a dispensing aperture  
5 and a movable panel selectively positionable for re-closing the aperture.

## BACKGROUND OF THE INVENTION

The applicant has observed that beverage containers, especially aluminium alloy drink cans, have a cap with a partially severable portion that must be severed to reveal a dispensing aperture for dispensing the beverage therein. The severed portion cannot reclose the aperture. Many cans are designed to press the severed portions into the interior of the cans and the severed portions are not retrievable. In some known cans the severed portions can be totally removed. In some containers, a tab opener that is pivotally fixed to the cap is used to open a can by pressing against the severable portion until severed. In some other containers, the severable portion is severed by pushing in that  
15 portion.

Once opened, the dispensing apertures of these containers remain open. The opened containers allow insertion of undesirable substances such as drugs into the containers without any need to tamper with them. In addition, insects such wasps, flies and undesired objects such as dusts can find their way into the container.

20 Many people drink beverages directly from the aperture in the cap. Wasps, flies and other foreign matters that have entered the container after opening and left unattended, can be consumed by drinkers, or may sting to cause pain or otherwise discomfort to these people.

## OBJECT OF THE INVENTION

25 It is an object of the present invention to alleviate or to at least reduce to a certain level one or more of the prior art disadvantages.

## SUMMARY OF THE INVENTION

In one aspect therefor the present invention resides in a cap for a beverage container having a hollow body member with opposed ends, a bottom member at one end thereof and the cap is for fixing to the other end thereof. The cap comprises a panel  
30 member arranged for fixing to the body member at said other end and configured to

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extend over said other end when fixed to said other end, the panel member having a main portion and a partially or fully severable portion arranged for a user of the container to apply a pressure on said severable portion for severing same and thereby forming a dispensing aperture in a zone defined by the severed portion. The cap also has a closure member arranged, when fixed to said other end, to be within the container and the closure member is movable relative to the panel member between a closed position for closing passage of beverage through said dispensing aperture and an open position for dispensing the beverage through the dispensing aperture. The closure member has a handle arranged to extend through the dispensing aperture following forming thereof. The handle is configured for the user to manually move the closure member in a first direction towards the closed position and in a second direction towards the open position to reveal the passage for dispensing the beverage therein.

In another aspect therefor the present invention resides in a beverage container comprising a hollow body member with opposed ends, a bottom member at one end thereof and a cap at the other end thereof. The cap comprises a panel member fixed to the body member at said other end and configured to extend over said other end. The panel member has a main portion and a partially or fully severable portion arranged for a user of the container to apply a pressure on said severable portion for severing same and thereby forming a dispensing aperture in a zone defined by the severed portion. The cap also has a closure member arranged within the container and the closure member is movable relative to the panel member between a closed position for closing passage of beverage through said dispensing aperture and an open position for dispensing the beverage through the dispensing aperture. The closure member has a handle arranged to extend through the dispensing aperture following forming thereof. The handle is configured for the user to manually move the closure member in a first direction towards the closed position and in a second direction towards the open position to reveal the passage for dispensing the beverage therein.

In preference, the cap has an opener arranged for the user to manually move the opener to apply said pressure on the severable portion.

The panel member may be fixed to the body member at said other end by a seaming process.

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The panel member may have a weakened section from which a perimeter of the severable portion can be severed from the main portion by applying pressure to the severable portion. The weakened section may extend fully or partly around the severable portion. Where the weakened section extends fully around the severable portion, the severed portion can be separated from main portion.

The weakened section extending partly around the severable portion may be arranged so that the severed portion is pressed to move towards one side of the dispensing aperture.

Preferable, the weakened section is formed by a score line along said perimeter.

The opener may be in the form of a pull tab pivotally mounted to the main portion. Preferably, the tab has an inner end lying over the severable portion and an outer end. In use, the outer end is pulled upwards to pivot the inner end downward to apply pressure to the severable portion for severing same. It is further preferred that the main portion has a top surface and a first rivet with an upper end extending from its top surface, and the pull tab is pivotally mounted on the rivet and arranged above the top surface.

The panel member may have an under surface and the closure member is arranged on or beneath the under surface.

The closure member may be arranged to be rotatably movable relative to the panel member. In preference, the closure member is in the form of a disk rotatably mounted on a second rivet fixed to the main portion or on a post extending from the first rivet. The post for the can be bonded to the under surface of the panel member.

The first rivet may have a hollow section and the post is preferably fixed in the hollow section. The upper end of the first rivet is preferably wedge shaped in order to positive retain the opener when the opener is moved to sever the severable portion. Preferably, the post has an outer end within said upper end of the first rivet and the outer end is shaped to be retained by said upper end. More preferably, the outer end is formed in a compatible wedge shape. The post may have an inner end opposite to said outer end and the inner end is preferably an enlarged head to positively retain the closure member.

Alternatively, the closure member is in the form of a disk having its peripheral edge retained in a retention groove formed in the body member or panel member. The

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disk may have a bent or curved peripheral edge and the groove is shaped to accommodate the peripheral edge. In preference, the retention groove is formed as a recessed section in the main portion of the panel member and the recessed section is arranged to receive the peripheral edge of the disk so that the disk is rotatably supported therein. In another  
5 form, the cap member may have the retention groove formed in the countersink and the disk is configured to be rotatably supported in the groove.

The disk may be circular in shaped and may have a through hole section and the disk is arranged so that at the open position the through hole section is in line with the dispensing aperture.

10 The closure member can have printed matter thereon for promotional purposes such as awarding a prize, so that when it is pivoted across the dispensing aperture to close the aperture to prevent foreign objects such as wasps and flies entering the container the promotional matter can be clearly seen.

Typically, the closure member is arranged to seal said dispensing aperture when  
15 it is in the closed position. In one form, a sealing member is applied to the closure member or to the main portion surrounding the dispensing aperture to substantially seal the aperture when the closure is in the closed position in order to assist in retaining the carbonation of the beverage in the can.

#### BRIEF DESCRIPTION OF THE DRAWINGS

20 In order that the invention can be clearly understood and put into practical effect the invention will now be described in reference to the accompanying drawings which illustrate non-limiting embodiments of the present invention, and wherein:-

Figure 1 is a perspective view of a beverage container according to an embodiment of the present invention;

25 Figure 2 is a cross sectional view of the container shown in Figure 1;

Figure 3 is an enlarged partial cross sectional view of the container shown in Figure 1;

Figure 4 is an enlarged partial cross sectional view of the cap member shown in Figure 3;

30 Figure 5 is a perspective view of the beverage container shown in Figure 1 after the container has been opened and the closure member is in a closed position;

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Figure 6 show the beverage container of Figure 5 with the closure member in the open position;

Figure 7A is an enlarged view of the underside of the cap member before the container is opened;

5        Figure 7B is an enlarged view of the underside of the cap member after the container is opened and the door in a closed position;

Figure 8A shows another form of the closure member for the container shown in Figure 7A;

10        Figure 8B shows the container of Figure 8A with closure member in the closed position;

Figure 9A is a further form of the closure member for the container shown in Figure 7A with the closure member in the open position;

Figure 9B shows the container of Figure 9A with the closure member in the closed position;

15        Figure 10 is an enlarged partial cross sectional view of the cap member shown in Figure 9A;

Figure 11 is an enlarged cross sectional view of yet another further form of the closure member and panel member for the container shown in Figure 1;

20        Figure 12 is an enlarged cross sectional view of a different form of the closure member and panel member shown in Figure 11;

Figure 13 is an enlarged partial cross sectional view of the container shown in Figure 11 after fixing to the body member;

25        Figure 14 is an enlarged partial cross sectional view of the tubular body member, an enlarged cross sectional view of the closure member and panel member before the panel member is seamed to the tubular body member;

Figure 15 is an enlarged partial cross sectional view of the closure member shown in Figure 14;

Figures 16 and 17 are respective enlarged partial views of the embodiments of the closure members and the panel members shown in Figures 11 and 12;

30        Figure 18 is a plan view of one form of the closure member;

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Figure 19 is an under view of an embodiment of the cap member having the closure member shown in Figure 18;

Figure 20 is a plan view of another form of the closure member;

Figure 21 is an under view of an embodiment of the cap member having the closure member shown in Figure 20;

Figure 22 is a plan view of a further form of the closure member for a cap member with a folded in severable portion;

Figure 23 is a plan view of a further form of the cap member; and

Figures 24 to 25 show certain positions of the closure member shown in Figure 22 fitted to the cap member shown in Figure 23.

#### DETAILED DESCRIPTION OF THE DRAWINGS

Referring initially to Figures 1 to 7 there is shown a beverage container 10 which in this case is in the form of an aluminium alloy beverage can for a beverage such as any one of beer, carbonated drink, fruit juice and the like. It should be noted that the container 10 can also be made of steel or plastic or any material that can be formed into a can.

The can 10 has a tubular body member 12 with a top open end and a bottom end. As can be seen in Figure 2 a base 14 is integrally formed at the bottom end to close this end, and a cap 16 is sealingly fixed to the periphery at the top open end by seaming in this case. A rim 18 is formed at the seam and a countersink 32 is formed radially inwardly of the rim 18..

The can 10 as shown is an easy open type. The cap or panel member 16 has a severable portion 20 with its severable perimeter defined by a score line 22. A ring pull tab 24 fixed to the panel member 16 by a rivet 26. The tab 24 has an outer end configured for lifting or pulling with a user's finger and an inner end extending over the severable portion 20. The tab 24 when pulled moves pivotally so that its inner end presses against the portion 20 to partially sever the portion 20 along the score line 22. The partially severed portion 20 remains connected with the main portion of the panel member 16 at a position shown as 71. Further pulling of the tab 24 would bend the severed portion 20 into the can 10 about the position 71. Thereby, a dispensing or pour aperture 38 is presented for dispensing the beverage in the can 10.

Figures 2 and 3 show that the panel member 16 has a post 41 fixed in the hollow

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section of the underside of the rivet 26. A closure member 67 in the form of a disk is rotatably mounted to the post 41. The disk 67 has a handle 49 accessible through the aperture 38, thereby allowing the disk 67 to be rotated by using the handle 49.

5 Figure 4 shows the post 41 has a head 90 and a recessed section 91 to which the disk 67 is rotatably mounted. The recessed section 91 and the head 90 prevent separation of the disk 67 from the post. The rivet 26 is hollow and its top end is in the form of a cam or wedge shaped section 37. The interior of the section 37 is also wedge shaped. The inner end 29 of the post 41 is within the wedge shaped interior and this end is flared to assist retaining the post 41 in the rivet 26.

10 Figure 6 shows that the handle 49 is above the top surface of the cap 16 when the severable portion 20 is pressed to the position as shown in this Figure. The handle 49 is positioned that it has minimal interference with the severing action and the disk 67 is made of a resilient material so that the handle 49 would extend through the aperture 38 when the severed portion 20 moves past the handle 49. The user can push the handle 49  
15 to move the disk 67 to the closed position as shown in Figure 5. Figure 5 shows the disk 67 is in the closed position after the panel member 16 has been opened by severing the portion 20. The disk 67 has the word WIN 87 printed as one example for the promotional use of the product.

Figure 7A shows the underside view of the panel member 16 where the disk 67  
20 is in a the open position and the severable portion 20 is intact with the panel member 16. When the portion 20 is severed and pressed into the can 10, the handle 49 will be exposed through the so formed aperture 38 as shown in Figure 7B. Returning to Figure 6, the can 10 as shown is opened by severing the portion 20 which is folded down and remained attached to the panel member 16 in the position marked as 71. The handle 49  
25 is exposed through the aperture 38.

Figure 8A and 8B shows another form of the closure member or disk 67. As shown in Figure 8A, the disk 67 is circular in shape and has an outer peripheral edge 105 and a hole 52 in the disk 67 is partially covering the underside of the severable portion 20 before opening the can 10. When opening, the severable portion 20 passes through the  
30 hole 52 and the portion 20 contacts a downward curved section 172 and pivots the disk 67 to allow the handle 49 to be exposed through the dispensing aperture 38. Figure 8B

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shows the disk 67 is a closed position covering the aperture 38. Figure 13 shows that the tab 24 being lifted to sever the severable portion 20. The severed portion 20 is then folded down about the position 71. The disk 67 has a curved projection 172 positioned so that the severed portion 20 is in contact with the curved projection 172 when it is being folded. The severed portion 20 thus causes the disk 67 to rotate while it is being folded. The disk 67 is configured so that when the severed portion 20 rotates the disk 67 through a certain degrees to an open position the handle 49 is in line with the dispensing aperture 38 and due to resiliency of the disk 67 would then projects above the top surface of the panel member 16.

Figures 9A to 10 shows a further form of the invention. In Figure 9A, there is shown that the panel member 16 has a score line 93 to allow the tab 24 and severable portion 20 to be totally removed from the panel member 16 when opened. An indent or stop 152 is formed in the panel member 16 to prevent the disk 67 from moving to an inaccessible position. Figure 10 shows another rivet 132 formed with the wedge section 58 in the panel member 16 to which the post 41 is applied. In another form the post 41 is bonded to the underside of the panel member 16. Figure 9B shows the panel member 16 after it has been opened and the disk 67 has been pivoted to close the aperture 38.

Figures 11 to 12 shows another embodiment of the invention. As shown in Figure 11, the panel member 16 has a groove 34 formed in the inner wall of a countersink to receive a curved section 54 on the disk 67. The curved section 54 is configured so that it is supported in and can rotate in the groove 34 to thereby allow the user to move the disk 67 to the closing and opening positions. Figure 12 shows the panel member 16 having a groove 47 formed on the outer wall of the countersink to receive the curved section 97 of the disk 67. The curved section 97 can rotate in the groove 47 to allow the disk 67 to be positioned for closing and opening of aperture 38. Details of the groove 34, 47 and the curved section 54, 97 are clearly shown in the enlarged views in Figures 16 and 17 respectively.

Figure 14 shows another embodiment of the invention where the disk 67 is fixed between the tubular member 12 and the cap member 16. The disk 67 has an outer peripheral portion 95 to be fixed between the tubular body member 12 and cap member 16. The tubular member 12 has a turned edge 95 at said other end and the panel member



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16 has a curved edge 102 configured for wrapping around the turned edge 42 and fixed thereto by a seaming process. As such, the outer edge 95 of the disk 67 is retained between the curved edge 102 and the turned edge 42, and the disk 67 is free to rotate. Figure 15 shows the disk 67 having grooved section 5 to receive the curved section 7 on the outer peripheral portion 95 allowing the disk 67 to rotate.

Referring to Figure 18, there is shown a closure member 67 in the form of a disk with a semi-circular shaped through hole 52 and a curved peripheral edge 54. A handle 49 is provided adjacent to the through hole 52 at a position which is slightly off centre. Figure 19 shows an embodiment of the cap member having the panel member 16 fitted with the disk 67 shown in Figure 18. The curve edge 54 of the disk 67 is retained in the groove 34 which is configured to allow edge 54 of the disk to be movable while being retained therein. The groove 34 is in the inner wall of the countersink 32. A strip of sealing member 178 is applied around the score line 22. Using the handle 49, the user can turn the disk 67 between the closed position and the open position. In the closed position, the sealing member 178 engages the solid section of the disk 67 and thereby seals the gap between the disk 67 and the panel member 16 adjacent to the dispensing aperture 38. As such, the flow passage through the aperture 38 is closed.

In Figure 20, the disk 67 has a strip of sealing member 178 on the solid section thereof. The strip of the sealing member is shaped and positioned to surround the dispensing aperture 38 when the disk 67 is placed in the closed position. Figure 21 shows the disk 67 in the open position to allow the severable portion 20 to be severed so that beverage can flow through the aperture 38 formed following severing of the portion 20. To close the dispensing aperture 38, a user simply engages the handle 49 which is now projecting through the aperture 38 and above the top surface of the panel member 16, with a finger or fingers and turns the disk 67 in a counter clockwise direction to the closed position. In this position, the through hole 52 is no longer in line with the aperture 38. Instead, the sealing member 178 is in position to surround the aperture 38 and thereby sealing the gap between the disk 67 and the panel member 16 adjacent to the dispensing aperture 38. Accordingly, the flow passage through the aperture 38 is closed.

Figure 22 shows a closure member 67 in the form of a disk with a substantially semi-circle shaped through hole 52. The disk 67 has a curved peripheral edge 54 arranged

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for retention in the groove 34 in the panel member 16, tubular member 12 or between the curved edge 102 and the turned edge 42 as hereinbefore described. A contoured portion 55 is provided along the inner edge of the through hole 52. The contoured portion 55 is shaped to substantially match that along the inner edge of the score line 22. A strip of sealing member 178 is applied to the disk's top surface. The sealing strip 178 is shaped to encircle a score line 22 on a top panel member 16 (see Figure 23). The sealing strip 178 has an enlarged sealing part 147. The disk 67 also has a handle 49 extending outwardly and an engagement projection 114 directed into the through hole 52. Referring to Figure 23, the panel member 16 has a countersink 32 arranged with a groove 34 (see Figures 16 and 17) for retaining the peripheral edge 54 of the disk 67. The panel member 16 also has a score line 22 defining a severable portion 20 which is to be severed therefrom to form a dispensing aperture 38 (see Figure 25). The score line 22 terminates at a position 71 so that when a severable portion 20 is severed along the score line 22 the severed portion remains connected to the panel member 16. A sealing pad 142 is applied at a termination point of the score line 22. The pad 142 is arranged for sealing a gap between the folded down portion 22 and the panel member 16 as shown in Figures 24A and 25. The panel member 16 has a rivet 26 for rotatably supporting a lift opener 24 as aforescribed.

In Figure 24, the disk 67 shown in Figure 22 is fitted to the panel member 16 shown in Figure 23. As shown, the severable portion 20 is yet to be severed and the disk 67 is positioned so that its engagement projection 114 is under the portion 20 and the through hole 52 is in place to allow the portion 20 when severed to be folded downwardly in to the container 10. As shown in Figure 24A, the portion 20 is severed along the score line 22 as the severed portion 20 is being folded downwardly it engages the projection 114 and causing the disk 67 to rotate in an anticlockwise direction. The handle 49 extends through the now formed dispensing aperture 38. The sealing pad 142 seals a small gap behind the folded portion 20.

When the user desires to close the aperture 38, the handle 49 is moved from one side of the aperture 38 to the opposite side. In doing so, the disk 67 rotates to the position where the sealing strip 178 is in line with the aperture 38 and seals the gap between the panel member 16 and the disk 67. The disk 67, if made of a resilient material, would

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apply pressure to positively seal the gap. To open the aperture 38 for dispensing beverage, the handle 49 is moved to said one side of the aperture 38 to move the disk 67 so that the through hole 52 is in line with the aperture 38 to thereby allowing a passage through the aperture 38.

- 5        Whilst the above has been given by way of illustrative example of the present invention many variations and modifications thereto will be apparent to those skilled in the art without departing from the broad ambit and scope of the invention as herein set forth in the following claims.

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